

## **REMARKS**

Reconsideration and withdrawal of the rejections of this application and consideration and entry of this paper are respectfully requested in view of the herein remarks, which place the application in condition for allowance.

### **I. STATUS OF CLAIMS AND FORMAL MATTERS**

Claims 3, 4, 7, 10-17, 31 and 63 are pending in this application. A paragraph updating the status of the parent application has been added to the specification.

### **II. THE 35 U.S.C. 102/103 REJECTION HAS BEEN OVERCOME**

Claims 3, 4, 7, 10-17, 31 and 63 were rejected as allegedly being anticipated or in the alternative as being obvious over Nakamura (U.S. Patent 6,291,763).

#### ***The claims are not anticipated by Nakamura***

MPEP 2131 states in part that "A claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)" and that "The identical invention must be shown in as complete detail as is contained in the...claim." see *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d, 1913, 1920 (Fed. Cir. 1989).

In addition, 35 U.S.C. 102 begins by stating "A person shall be entitled to a patent unless..." (emphasis added), i.e. it is the Examiner's burden to explicitly show that all of the elements of the invention has been taught in the prior art and that the identical invention was shown in as complete a detail as in the applicants' claim.

Claim 3 is the independent claim and reads as follows:

"A photoelectric conversion device comprising a semiconductor and a polymeric electrically conducting agent, wherein said polymeric electrically conducting agent has a melting point temperature which is lower than the operation temperature of said photoelectric conversion device, and wherein said polymeric electrically conducting agent has a glass transition temperature Tg."

In attempting to match the elements of the applicants' invention with the teachings of Nakamura, the Examiner stated on page 3, paragraph 5, lines 7-8 that "[t]he molten salts Y19, Y20, Y26, Y27, Y31, Y33, Y35 and Y36 in the table at cols. 18-25 are **polymeric**." (emphasis

added). The Examiner acknowledges that Nakamura only refers to  $\text{CH}_2\text{CH}_2\text{O}$ - units and that many of the salts only have two repeat units, but asserts that this is sufficient to be considered a polymer and cites the disclosure of Priddy (U.S. Patent 4,288,379) and Klein (U.S. Patent 4,710,520) to support this position. However, this is an erroneous position for the following reasons:

In trying to ascertain the meaning of the word “polymer”, the Examiner improperly looked for definitions which would meet his needs to use Nakamura as prior art rather than first looking to the specification of Nakamura itself to determine the meaning of “polymer”. It is well known that “[w]e cannot look at the ordinary meaning of term...in a vacuum. Rather, we must look at the ordinary meaning in the context of the *written description and the prosecution history*.” *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005), see also *Philips v. AWH Corp.* (decided 12 July 2005 - Fed. Cir. 2005). Nakamura never described or defined his molten salts Y19, Y20, Y26, Y27, Y31, Y33, Y35 and Y36 to be polymers. As such, any definition for a “polymer” within the Nakamura specification would be restricted to the plain meaning of the term as understood by those of ordinary skill in the art (an example of a definition of polymer from the Encyclopedia of Columbia University Press which states:

“Polymer: chemical compound with high molecular weight consisting of a number of structural units linked together by covalent bonds (see chemical bond). The simple molecules that may become structural units are themselves called monomers; two monomers combined form a dimer and three monomers a trimer.”)

If Nakamura had intended the molten salts of Y19, Y20, Y26, Y27, Y31, Y33, Y35 and Y36 to be polymers, he would have had to act as his own lexicographer and specifically define that a dimer of  $\text{CH}_2\text{CH}_2\text{O}$  was intended to be a polymer as this would have been outside the scope of the generally accepted plain meaning of the term “polymer”. The fact that the Examiner was able to find references which met the definition of “polymer” that he needed in order to employ Nakamura as prior art is irrelevant when there is no signal that Nakamura taught polymers or ever intended to have an alternative meaning for polymer which would have been outside the plain meaning of the term as recognized by those of skill in the art.

Even if there had been a reason to look beyond the four corners of the specification of Nakamura, the definition of “polymer” in the Priddy and Klein references come from non-

analogous art, i.e. the Priddy reference is directed toward “hydrocarbon poly(l gem-bis(t-alkylperoxy)alkanoates” and Klein is directed toward high temperature filter materials. There is no explanation from the Examiner as to why one of ordinary skill in the photoelectric conversion art would find a self definition of polymer by Priddy and Klein in their respective arts to be relevant to the photoelectric conversion devices and photo cells of Nakamura.

The failure of Nakamura to teach a polymeric electrically conducting agent alone would be sufficient to render the Nakamura reference insufficient for a holding of anticipation. However, Nakamura fails as an anticipatory reference for other reasons.

The Examiner offered his opinion that the molten salts Y19, Y20, Y26, Y27, Y31, Y33, Y35 and Y36 exhibit a melting temperature of 140°C or less and that they would also exhibit a glass transition temperature of 60°C or less. However, there was no factual support for this opinion. Even if the Examiner had been correct in his assumption that the molten salts of Nakamura were polymers, this alone is not enough to establish that they would have the required element of the applicants’ claim 4 (melting temperature of 140°C or less) and claim 7 (glass transition temperature of 60°C or less).

If the Examiner was relying on inherency to support his position with regard to these elements, the applicants remind the Examiner that MPEP 2112, sec. IV (Requirements of Rejection Based on Inherency; Burden of Proof) states “The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).....To establish inherency, the **extrinsic evidence** ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)(citations omitted).

The only “evidence” provided by the Examiner is the assertion that the molten salts of Nakamura are polymers, which has been disproven by the arguments presented above and even if they had been polymers, the Examiner’s rationale for inherency is based on technically incorrect premises.

With respect to the element of claim 4, it appears to be the Examiner's position that the polymeric molten salts of Nakamura exhibit a melting temperature lower than the operation temperature of the solar cell, such as about 140°C or less, basically since they are molten when used in the solar cell.

This position appears to be based on a misunderstanding by the Examiner of the term "molten salt". One has to distinguish between "molten salts" on one side and "ionic liquids" on the other side. In contrast to high temperature melts that are commonly referred to as "molten salts", ionic liquids are, as their name implies, salts that are liquid at low temperature – many at room temperature or below – and which, in a molten form, are composed wholly of ions. Conventional molten salts exhibit a high melting point (i.e. 801°C for sodium chloride and 614°C for lithium chloride), which greatly limits their use as solvents in most applications. Room temperature ionic liquids however, remain liquids at or below room temperature. Hence, the fact that a compound is categorized as a molten salt does not teach necessarily that it is molten at low temperature, as the Examiner appears to assert. The molten salt electrolyte of Nakamura et al is "preferred for securing both photoelectric conversion efficiency and durability". This, however, does not teach at all about the actual phase in which the material is present in the photoelectrical conversion device of Nakamura, let alone that it has a melting temperature of < 140°C. Accordingly, the fact, that the compounds given in columns 17-24 are referred to as "molten salts" does not necessarily imply that they have a melting temperature < 140°C. Therefore, the Examiner's understanding of the term "molten salt" is not appropriate as it has to be contrasted to ionic liquids which remain liquid at or below room temperature and could therefore be considered as having a melting temperature < 140°C. The fact, however, that Nakamura et al uses the term "molten salt" and not "ionic liquid" implies that the feature of presently pending claim 4 is not disclosed in Nakamura et al.

Moreover, the Examiner's presumption that the melting temperature of Nakamura's molten salts could somehow be equivalent to glass transition temperature is also incorrect. The term "glass transition temperature" applies only to polymers and is the temperature by which a polymer changes from being hard and brittle to soft and pliable. Glass transition is not the melting of a polymer as in the melting that is occurring with Nakamura's salts and only occurs in polymers in the amorphous state and not to polymers in the crystalline state. Col. 16, lines 6-11 of Nakamura clearly describes molten salt electrolytes to be pyridinium iodides, imidazolinium

iodides and triazolium iodides which are generally crystalline and therefore do not have a glass transition temperature. Therefore, even when accepting (which the applicants do not) the Examiner's erroneous position that Nakamura teaches polymeric molten salts, this still is inadequate to establish inherency for the applicants' claimed glass transition temperature because not every polymer has a glass transition temperature.

With respect to claim 13, the Examiner alleges that the solvent and iodine recited in column 25, lines 13-21 of Nakamura can be read on the dopant of claim 13. This is simply not appropriate, since the term "dopant" is endowed with a specific meaning to one skilled in the art. This can for example be seen on page 45, middle paragraph of the present application which explicitly states that "dopants" can increase short-circuit currents up to an order of magnitude". This does not apply to the solvent and/or the iodine, and hence these terms do not read on the term "dopant" as recited in presently pending claim 13.

The Examiner further alleges that the molten salts of Nakamura are hole transporters and therefore can be read on the limitations of presently pending claim 14. However, the hole transporting agent in Nakamura is an  $I/I_2$ -redox couple which is the actual charge transporting system in the electrolyte system (see for example column 34, lines 22-25.) Hence, the Examiner's allegation that the molten salts are hole transporters in Nakamura is simply not true. This also becomes clear from column 15, line 61 – column 16, line 5, more specifically column 16, line 1, which describes what is contained in the charge transporting material within the charge transporting layer of a photoelectric conversion device according to Nakamura. Therefore, there is also a molten salt electrolyte containing ions of a redox system, and this redox system is the aforementioned redox couple such as iodine/iodide. Hence, the molten salts of Nakamura themselves do not take part in the charge transport. Rather, it is the redox system within them, as exemplified by iodine/iodide. Furthermore, Nakamura explicitly states that the molten salt electrolyte has the purpose of securing both photoelectric conversion efficiency and durability (column 16, lines 6-7). This is not the same as being a hole transporting agent. Therefore, this element is also not disclosed in Nakamura.

For any of the above reasons, the Nakamura reference does not anticipate that applicants' claimed invention as all of the elements are not taught nor are they presented in a manner which shows as much detail as is contained in the applicants' claim.

***The claims are not rendered obvious by Nakamura***

MPEP 2143.03 states in part that "To establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)". However, as recited above in the applicants response to the anticipation rejection, all elements of the invention are not taught by the Nakamura reference and given the differences in the invention, there would be no motivation to modify the Nakamura reference to approximate the applicants claimed invention.

MPEP 2142 states in part that the examiner bears the initial burden of *factually supporting* any *prima facie* conclusion of obviousness (emphasis added). Although use of Nakamura was also used to reject the claims on obviousness grounds, there is no explanation or factual support for those explanations to address any difference between the teachings of Nakamura and the claimed invention. The Examiner's arguments for inherency in his anticipation rejection is of little relevance in an obviousness rejection as by definition an "inherent" property is one that was not immediately recognizable by those of ordinary skill in the art and hence would not be obvious if there was any difference between the inherent property of the Nakamura reference and that of the applicants claimed invention.

Therefore, since all limitations of the applicants' claims are not taught by nor is there any motivation to modify Nakamura to account for the differences between Nakamura and the applicants' claimed invention, or any factual support for making such modifications, the applicants' claims are unobvious over Nakamura.

**III. THE DOUBLE-PATENTING REJECTIONS ARE OVERCOME**

Claims 3, 4, 7, 10-14 and 31 were allegedly directed to an invention not patentably distinct from claims 1-19 of commonly assigned U.S. Patent No. 6,700,058 (which resulted from the parent of this application).

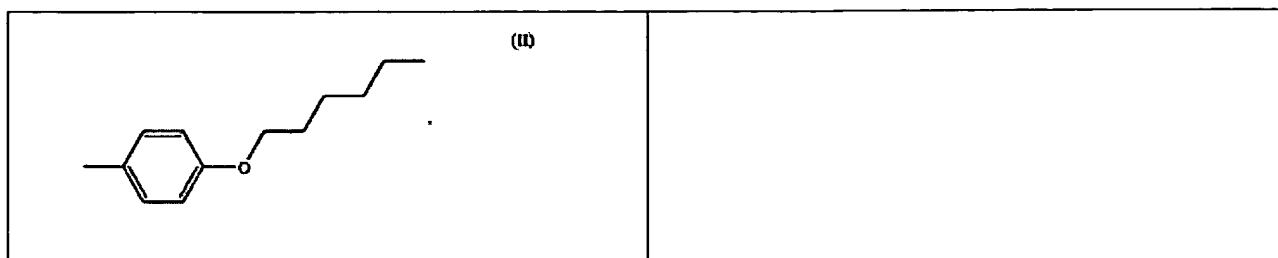
Claims 15-17 and 63 were allegedly directed to an invention not patentably distinct from claims 1-19 of commonly assigned U.S. Patent 6,700,058 (which resulted from the parent of this application) in view of Nakamura (U.S. Patent 6,291,763). Both of these rejections are traversed for the following reasons.

35 U.S.C. 282 states that "[a] patent shall be presumed to be valid." and MPEP 1701 states that [PTO] office personnel are not to express opinion on the validity of the patentability of a patent. However, this is precisely what the Examiner has done in rejecting the claims

simultaneously over Nakamura and on double-patenting grounds.

With the double patenting rejection of claims 3, 4, 7, 10-17, 31 and 63, the Examiner is stating that these claims are patentably indistinct over claims 1-19 of the '058 patent. With the above rejection of claims 3, 4, 7, 10-17, 31 and 63, the Examiner is in effect also rejecting claims 1-19 of the '058 patent. Not only is this an improper opinion on the validity of the '058 patent, it is totally incongruous with the Examiner's previous actions, i.e. the Examiner of this application was also the Examiner of record for the '058 patent. Claims which covered the subject matter of both claims 3, 4, 7, 10-17, 31 and 63 in the present application and claims 1-19 of the '058 patent were both initially rejected by the Examiner over Nakamura. Further prosecution of both sets of claims ultimately resulted in the allowance of claims which became claims 1-19 of the '058 patent and the filing of a continuation application covering the subject matter of currently pending claims 3, 4, 7, 10-17, 31 and 63, i.e. the Examiner previously recognized these invention to be separate and patentably distinct (see comparison of claim 2 from the '058 patent and independent claim 3 from this applications below):

Claim 2 from U.S. Patent 6,700,058	Claim 3 from present application
<p>A photoelectric conversion device, comprising</p> <p>the compound according to claim 1.</p> <p>Claim 1 A compound utilized as a hole transporting agent which is a tris(aryl methoxyphenyl amino)benzene derivative represented by the formula (I):</p> <div data-bbox="227 1365 730 1764" data-label="Chemical-Block"> <p style="text-align: right;">(I)</p> </div> <p>Wherein Ar is a substituent represented by formula (II):</p>	<p>A photoelectric conversion device comprising</p> <p>a semiconductor and a polymeric electrically conducting agent, wherein said polymeric electrically conducting agent has a melting point temperature which is lower than the operation temperature of said photoelectric conversion device, and wherein said polymeric electrically conducting agent has a glass transition temperature Tg.</p>



As can be seen from the comparative example set forth above, even if the Examiner believed in the propriety of the rejection of claims 3, 4, 7, 10-17, 31 and 63 over Nakamura, there was ample justification for allowing claims 1-19 over Nakamura as the “claim-by-claim” comparison test for obviousness-type double patenting clearly would not suggest to one of ordinary skill in the art that the subject matter of the present claims 3, 4, 7, 10-17, 31 and 63 was an obvious variant of the subject matter of claims 1-19 in the ‘058 patent.

Therefore, the Examiner’s previous actions confirms that claims 3, 4, 7, 10-17, 31 and 63 are not an obvious variant of claims 1-19 in the ‘058 patent and as such the obviousness-type double patenting rejection should be withdrawn.

### **REQUEST FOR INTERVIEW**

In the interest of adhering to the tenets of compact prosecution and obtaining good customer service (see page 7 of the FY-2004 Performance and Accountability Report), the applicants request that the teachings of MPEP 707.07(j), sections II and III be applied, especially with regard to the Examiner suggesting amendments to the claims if the rejections are upheld.

In accordance with MPEP 713.01, section III, should any issue remain as an impediment to allowance, an interview with the Examiner and SPE are respectfully requested; and, the Examiner is additionally requested to contact the undersigned to arrange a mutually convenient time and manner for such an interview (“An interview should normally be arranged for in advance, as by letter, facsimile, electronic mail, telegram or telephone call, in order to insure that the primary examiner and/or the examiner in charge of the application will be present in the office.” *Id.*).

### **CONCLUSION**

In view of the remarks and amendments herewith, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are earnestly solicited. The undersigned looks forward to hearing favorably



from the Examiner at an early date, and, the Examiner is invited to telephonically contact the undersigned to advance prosecution. The Commission is authorized to charge any fee occasioned by this paper, or credit any overpayment of such fees, to Deposit Account No. 50-0320.

Respectfully submitted,  
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